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REMARKS

Claims 1-49 are pending in this application, claims 35-49 having been added above. Claims 1, 12, 23, 34, and 39 are the independent claims.

Claims 1-11 and 23-33 stand rejected under 35 U.S.C. 112, second paragraph for various informalities. Specifically, the Examiner states that it is unclear whether claims 1-11 claim an optical transmission system or an optical transmission span. The preamble of dependent claims 2-11 have been amended to clearly point out that claims 1-11 are directed to an optical transmission span. The Examiner also states that it is unclear whether the optical interface device of claim 23 includes the optical transmission path. Claim 23 has been amended to more clearly point out that the optical transmission path is not a part of the optical transmission path, but rather that the optical interface device, after transforming the optical signal, directs it onto the optical transmission path. Accordingly, Applicants respectfully request that the rejection of claim 1-11 and 23-33 under 35 U.S.C. 112, second paragraph, be reconsidered and withdrawn.

Claims 1, 6-8, 11-12, 17-19, 22-23, 28-30 and 33-34 stand rejected under 35 U.S.C. 102(e) as being anticipated by Way, U.S. Patent Appl. Pub. No. 2002/0021464. In addition, claims 9-11, 20-21 and 31-32 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Way in view of Trischitta et al. These rejections are hereby traversed for at least the following reasons.

In accordance with the present invention, an optical interface device is provided that transforms an optical signal that initially conforms to a first optical layer transport protocol into an optical signal that conforms to a second optical layer transport protocol. The optical interface device receives the optical signal from an optical transmission terminal and, after transforming the optical signal, directs it through an optical transmission path.

More specifically, as set forth in claim 1, an optical transmission span is provided, which is incorporated in an optical transmission system. The optical transmission system has an optical transmission terminal with first and second optical interfaces (e.g., terminal 400 having interfaces 410 and 420 in the embodiment of the invention depicted in FIG. 4). The first interface is configured to communicate in accordance with an industry-standard, network level protocol. The second interface is

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configured to communicate in accordance with a first optical layer transport protocol. The optical transmission span also includes an optical interface device that has a third interface communicating with the second interface of the optical transmission terminal in accordance with the first optical layer transport protocol and a fourth interface configured to communicate in accordance with a second optical layer transport protocol (e.g., in the embodiment depicted in FIG. 4, optical interface device 420 having interfaces communicating with terminal 400 and optical transmission path 440). The optical interface device also has a signal processing unit for transforming optical signals between the first and second optical layer transport protocols. The optical transmission span also includes an optical transmission path optically coupled to the fourth optical interface of the optical interface device for transmitting optical signals in accordance with the second optical layer transport protocol.

Way, U.S. Patent Appl. Serial No. 2002/0021464 relates to a WDM transport system. The Examiner asserts that Way shows the claimed first, second third and fourth optical interfaces. However, as detailed below, while Way clearly shows a multitude of interfaces, it does not show the claimed second and fourth interfaces that are configured to communicate with the first and second optical layer transport protocols, respectively. As a result, Way also does not show an optical interface device that transforms an optical signal that initially conforms to a first optical layer transport protocol into an optical signal that conforms to a second optical layer transport protocol.

In particular, the Examiner asserts that Way shows in FIG. 1 transponders 24 that have a first interface connecting to optical transmitters 20 and a second interface connecting to multiplexer 26. The Examiner further asserts that multiplexer 26 and the optical amplifier 52 define a third interface that communicates with a fourth interface defined by a subsequent transmission span or the receiver 14. Thus, the Examiner is apparently asserting that the combination of multiplexer 26 and optical amplifier 52 corresponds to the claimed optical interface device and serves to transform an optical signal that initially conforms to a first optical layer transport protocol into an optical signal that conforms to a second optical layer transport protocol.

Since claim 1 requires both the second and third interfaces to be configured to the same optical layer transport protocol, the correspondence of elements proposed by the

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Examiner requires that the transponders 24 and the combination of multiplexer 26 and amplifier 52 both direct the optical signal in accordance with the same optical layer transport protocol. However, claim 1 also requires the fourth interface to be configured to a different optical layer transport protocol than the third interface. This requirement implies that in Way the optical layer transport protocol employed along the transmission span immediately downstream from amplifier 52 differs from the protocol employed by a subsequent transmission span. However, Way does not disclose the use of two different protocols along the transmission path 16. In fact, a transmission path that comprises multiple transmission spans concatenated by optical amplifiers will generally only employ a single optical layer transport protocol along its length. The mere presence of an optical amplifier along the path does not suggest a change in the protocol to which the optical signal conforms. Rather, the optical amplifiers are generally configured to ensure that the optical signal continues to conform to the same protocol at all points along the transmission path. Specifically, the optical amplifiers are designed to maintain the power level of the optical signal within a specified range that conforms to the optical layer transport protocol that is employed along the transmission path. Accordingly, Applicants respectfully submit that in the Way reference no transformation takes place between third and fourth interfaces from a first optical layer transport protocol to a second optical layer transport protocol. For at least this reason it is respectfully submitted that claim 1 and the claims that depend therefrom are patentable over Way.

The remaining independent claims 12, 23, and 34 and the claims that depend therefrom are believed to be allowable for at least those reasons presented above in connection with claim 1. Accordingly, it is respectfully requested that the rejection of claims 12, 23 and 34 and the claims that depend therefrom under 35 U.S.C. 102(e) and/or 103(a) as being anticipated by, and/or unpatentable over, Way be reconsidered and withdrawn.

Claims 1-2, 5-8, 11-13, 16-19, 22-24, 27-30 and 33-34 stand rejected under 35 U.S.C. 102(e) as being anticipated by Kasahara, U.S. Patent Appl. Pub. No. 2002/0131115. These rejections are hereby traversed for at least the following reasons.

Kasahara is deficient for at least the same reasons presented above in connection with Way. Specifically, in Kasahara the Examiner asserts that optical amplifier 2b

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corresponds to claimed signal processing unit and defines a third interface that is connected to a fourth interface to the subsequent portion of the transmission path 3. However, optical amplifier 2b is configured to ensure that the optical signal continues to conform to the same protocol at all points along the transmission path. For at least this reason it is respectfully submitted that claim 1 and the claims that depend therefrom are patentable over Kasahara.

Kasahara is deficient for at least another reason independent of those presented above. Claim 1 requires both an optical transmission terminal and an optical interface device. Each of these devices has an interface that allows them to communicate with one another. Kasahara, on the other hand shows a WDM terminal 2. The optical amplifier 2b is one internal component of the WDM terminal 2 – it is not a device distinct from the WDM terminal. That is, the optical amplifier 2b is merely one internal component of WDM terminal 2 that communicates with other internal components of the WDM terminal 2. As a result, Applicants fail to see anything in Kasahara corresponding to the claimed optical interface device having an interface that allows communication with an optical transmission terminal, as required by claim 1. For at least this additional reason it is respectfully submitted that claim 1 and the claims that depend therefrom are patentable over Kasahara.

The remaining independent claims 12, 23, and 34 and the claims that depend therefrom are believed to be allowable for at least those reasons presented above in connection with claim 1. Accordingly, it is respectfully requested that the rejection of claims 12, 23 and 34 and the claims that depend therefrom under 35 U.S.C. 102(e) as being anticipated by Kasahara be reconsidered and withdrawn.

Claims 1-4, 6-8, 11-15, 17-19, 22, 25-26 28-30 and 33-34 stand rejected under 35 U.S.C. 102(e) as being anticipated by Yin et al., U.S. Patent Appl. Pub. No. 2002/0008913. These rejections are hereby traversed for at least the following reasons.

The Examiner asserts that in Yin et al. the optical amplifier 38 corresponds to the claimed signal processing unit, which has an input defining a third interface and an output that defines a fourth interface. However, Yin et al. is deficient for at least the immediately preceding reason presented in connection with Kasahara. That is, Claim 1 requires both an optical transmission terminal and an optical interface device. Each of the

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devices has an interface that allows them to communicate with one another. Yin et al., on the other hand shows a transceiver terminal 22. The optical amplifier 38 is one internal component of the transceiver terminal 22 – it is not a device distinct from the transceiver terminal 22. That is, the optical amplifier 38 is merely one internal component of transceiver terminal 22 that communicates with other internal components of the transceiver terminal 22. As a result, Applicants fail to see anything in Yin et al. corresponding to the claimed optical interface device having an interface that allows communication with an optical transmission terminal, as required by claim 1. For at least this reason it is respectfully submitted that claim 1 and the claims that depend therefrom are patentable over Yin et al.

Independent claims 12 and 34 and the claims that depend therefrom are believed to be allowable for at least those reasons presented above in connection with claim 1. Accordingly, it is respectfully requested that the rejection of claims 12, 23 and 34 and the claims that depend therefrom under 35 U.S.C. 102(e) as being anticipated by Yin et al. be reconsidered and withdrawn.

Claims 1-33 are provisionally rejected under the judicially created doctrine of double patenting over claims 1-11, 18-28, and 35-45 of copending Application No. 10/621,115. A terminal disclaimer will be filed upon the indication of allowable subject matter.

Newly added independent claim 39 is similar to claim 23 except that claim 39 sets forth that the optical interface device is operable with a variety of different optical transmission terminals that employ different proprietary optical transport layer protocols. Support for this claimed feature is set forth, for example, in paragraph 22 of the specification, which states that “The interface provides high compatibility between the proprietary interface of terrestrial optical terminals available from multiple vendors and the undersea transmission path. That is, the interface is designed to be terminal independent and serves as an interface between terrestrial optical layer transport protocols and an undersea optical layer transport protocol.” Applicants respectfully submit that this claimed feature is not shown or suggested in the cited references.

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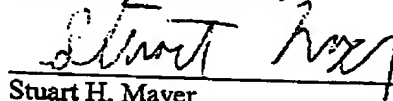
Conclusion

In view of the foregoing, it is believed that the application is now in condition for allowance and early passage of this case to issue is respectfully requested. If the Examiner believes there are still unresolved issues, a telephone call to the undersigned would be welcomed.

Fees

If there are any fees due and owing in respect to this amendment, the Examiner is authorized to charge such fees to deposit account number 50-1047.

Respectfully submitted,



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